

REMARKS

Claims 1-3, 8-11, 16-19, 24 and new claims 25-28 are now in this application.

Claims 1-24 are rejected. Claims 4-7, 12-15 and 20-23 are cancelled. Claims 1, 9, 16, 17 and 24 are amended herein to clarify the invention, to broaden language as deemed appropriate and to address matters of form unrelated to substantive patentability issues.

Title

The title has been amended to "Video game that interpolates between animated segments to create new segments" which is clearly indicative of the invention to which the pending claims are directed.

Claim Rejection-35 U.S.C. §112

Claims 4, 12 and 20 are cancelled so the Examiner's rejection of these claims under 35 U.S.C. §112, second paragraph, has been rendered moot.

Claim Rejections-35 U.S.C. §102

Claims 1-6, 8-14, 16-22 and 24 are rejected under 35 U.S.C. §102(b) as being anticipated by Naka et al. (U.S. Patent No. 5,411,272).

Claims 1, 9 and 17 are amended to clarify the invention. The invention relates to the display of a moving game character, i.e., the manner in which character images are displayed when the character's moving speed is changed by operation of a game controller or operation member (element 183) by a player. In order to reduce costs, a storage unit stores a predetermined number of frames of image data for displaying different actions relating to the movement of the play character (see Figs. 3-39). A display control unit reads the frames of image data from the storage unit and consecutively displays a frame of image data at a constant interval, i.e., once every 1/60th second.

In the absence of input from the operation member (controller 183), a series of loop animations (a looped running animation) as shown in Figs. 4-20 are sequentially and repeatedly displayed. That is, each frame is displayed in the sequential order without skipping any frames and without modifying any frames (see Fig. 45A). This would constitute the "first action" as set forth in the claims, i.e., a running action. Thus, claim 1 now specifies that the display control unit is coupled to the operation member and arranged to sequentially display an image corresponding to each of the predetermined number of frames stored in the storage unit when the operation member is not operated. Claims 9 and 17 are amended to include a similar feature.

However, when the operation member is operated by a user (to cause the running speed of the character to be faster), the series of loop animations in its entirety are not repeatedly displayed on the screen since it would not be accurate of the increased speed of the character. Moreover, specific frames from the loop animations are not removed in order to create the appearance of a faster moving character, e.g., instead of showing Figs. 4-20 in a loop, only Figs. 4, 6, 8, 10, 12, 14, 16, 18 and 20 would be shown in a loop.

Rather, in accordance with the invention, when the operation member is operating, i.e., being controlled by the user, an entirely new image frame or frames is created from successive pairs of the frames of image data stored in the storage unit and displayed. These new image frames are not pre-stored in the storage unit but are temporarily created based on the operation of the operation member. Thus, instead of sequentially displaying all of the frames in the image data group, new frames are created and displayed.

As an example, suppose a game in which an image frame #5 (5th image frame of the loop animation sequence) is to be displayed at certain time when the user does not operate the operation member. When the user operates the operation member to increase the speed of the game character, instead of the 5th image frame, the 7.2 image frame needs to be displayed (the difference between the 5th and 7.2 image frame

representing the speed of the game character as imparted by the operation member). Frame 7.2 does not exist in the storage unit and must be generated by the display control unit, specifically, by interpolating between a 7th image frame and a 8th image frame. In a similar manner, the next frame to be displayed may be the 10.1 frame (obtained by interpolating between the 10th and 11th frame) and so on. In the next loop animation, instead of the 7.2 frame, the 7.3 frame may need to be displayed and created and it is interpolated between the 7th and 8th frames. Thus, there is a continuous interpolation of frames of image data.

To emphasize this feature, claim 1 now recites that when the operation member is being operated, the display control unit generates "new image data for a new frame to be created between successive frames stored in the storage unit by interpolation between the successive frames based on the operation of the operation member". Further, claim 1 specifies that the display control unit displays the newly generated image data. Claims 9 and 17 are amended to include a similar feature.

The features now set forth in claims 1, 9 and 17 are not disclosed in Naka et al.

Naka et al. shows a video game with a spiral graphics loop in which stored sprite patterns are displayed based on the tracked location of the character.

In contrast to the invention, Naka et al. does not disclose interpolating between frames of image data in a storage unit to create new frames of image data and displaying these newly created frames. Rather, only the stored sprite patterns are displayed and there is no creation of new sprite patterns representative of a location of the character between two successive depictions of the characters at two successive locations.

The Examiner stated that Naka et al. appears to interpolate between successive frames (Figs. 18A and 18B) (in the subsequent rejection of claims 7, 15 and 23). However, the program of Figs. 18A and 18B makes a determination of whether or not the character is moving within specific entry zones. The program relates only to which images should be displayed and does not even remotely discuss the possibility of creating new images from successive pairs of stored images.

Thus, Naka et al. does not disclose all of the features now set forth in claims 1, 9 and 17 and cannot anticipate the embodiments of the invention set forth in these claims or in claims 2, 3, 8, 10, 11, 16, 18, 19 and 24 which depend therefrom.

Moreover, with respect to claims 8, 16 and 24, the Examiner referred to column 10, lines 14-15 of Naka et al. to show the features of these claims. The Examiner's position is respectfully traversed because Naka et al. does not disclose

setting a unit moved amount of the play character constant, and in particular not at column 10, lines 14-15. Rather, the indicated portion of Naka et al. describes providing four patterns for displaying a running condition of "sprite" to enable the display of a simple running condition. It must be appreciated that a rapid movement of the background image in a horizontal direction with respect to the character makes the character appear to move faster despite the repeated use of the same four patterns at a constant speed. In this situation however, a unit moved amount of the character in a first action (running) is not required to be constant, as set forth in claims 8, 16 and 24. Thus, Naka et al. cannot be said to disclose such a constant unit moved amount.

Claim Rejections-35 U.S.C. §103

Claims 7, 15 and 23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Naka et al. in view of Halas et al. Although these claims have been cancelled, the subject matter thereof is now included in claims 1, 9 and 17, respectively.

Halas et al. describes the use of "in-between animators" which prepare animation sketches to be used between pairs of animation sketches prepared by the "key animator". These in-between animators thus physically create sketches to be used in a film.

In contrast to the invention, Halas et al. does not disclose generating frames by interpolating between successive frames based on the operation of an operation member, i.e., the frames to be generated are not known in advance but rather depend on the user's control of the operation member.

Thus, one skilled in the art could not have combined any purported teaching of Halas et al. with Naka et al. and arrive at the embodiments of the invention now set forth in the claims.

Information Disclosure Statement

It is respectfully submitted that the Information Disclosure Statement filed January 30, 2002 complies with 37 C.F.R. §1.98(a)(3) because a concise explanation of the relevance of the listed references was included or is not necessary. With respect to Japanese Publication Nos. 10-319957 and 2000-011199, an English-language Abstract providing an explanation of the relevance of these references was submitted. With respect to page 12 of the manual of the game "Decathlete", this reference is cited in the Japanese search report and an English-language version of the search report was submitted with the Information Disclosure Statement (see MPEP §609(A)(3)) (and as noted in the Information Disclosure Statement itself).

Thus consideration of these three references is respectfully requested.

For the convenience of the Examiner, APPENDIX II is provided herewith having a complete set of pending claims with all amendments effected therein.

Applicant respectfully requests a one month extension of time for responding to the Office Action. Please charge the fee of \$110 for the extension of time to Deposit Account No. 10-1250.

In light of the foregoing, the application is now believed to be in proper form for allowance of all claims and notice to that effect is earnestly solicited. Please charge any deficiency or credit any overpayment to Deposit Account No. 10-1250.

Respectfully submitted,
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APPENDIX I

AMENDED CLAIMS WITH AMENDMENTS INDICATED THEREIN

BY BRACKETS AND UNDERLINING

1. (Amended) A video game device for displaying a play character on a game screen displayed on a monitor, comprising:
an operation member for [and] moving the play character from a reference position to a predetermined position in a game space [by operating an operation member], [comprising:]
a storage unit for storing a first image data group including a predetermined number [plurality] of frames of image data for displaying a first action relating to the moving action of the play character and a second image data group including a plurality of frames of image data for displaying a second action,
a display control unit for reading the first and second image data [group] groups from the storage unit and displaying the action of the play character based on the read frames of image data, the display control unit being arranged to consecutively display the frames of image data at a constant time interval, and
a switch control unit for switching the first image data group to the second image data group such that the first action and the second action are smoothly successively displayed without any discontinuity when the play character reaches the predetermined position by repeatedly displaying the first action,

the display control unit being coupled to the operation member and being arranged to sequentially display an image corresponding to each of the predetermined number of frames stored in the storage unit when the operation member is not operated.

when the operation member is being operated, the display control unit being arranged to generate new image data for a new frame to be created between successive frames stored in the storage unit by interpolation between the successive frames based on the operation of the operation member and then to display the newly generated image data.

9. (Amended) A character action setting method in a video game in which a play character is displayed on a game screen on a monitor and moved from a reference position to a predetermined position in a game space by operating an operation member, the method comprising the steps of:

preparing a first image data group including a [plurality] predetermined number of frames of image data for displaying a first action relating to the moving action of the play character and a second image data group including a plurality of frames of image data for displaying a second action;

consecutively displaying a frame of image data at a constant time interval, said step of displaying a frame of image data comprising the steps of

sequentially displaying an image corresponding to each of the predetermined number of frames for the first action when the operation member is not operated, and

upon operation of the operation member,

generating new image data for a new frame to be created between successive frames by interpolation between the successive frames based on the detected operation of the operation member, and

displaying the newly generated image data; and

switching the first image data group to the second image data group such that the first action and the second action are smoothly successively displayed without any discontinuity when the play character reaches the predetermined position by repeatedly displaying the first action.

16. (Amended) A character action setting method according to claim [14] 9, wherein the moving speed of the play character displayed on the monitor by the first action varies according to the operated amount of the operation member, further comprising the step of setting the unit moved amount of the play character by the first action [is set] at a constant value regardless of the moving speed of the play character, and the distance of the predetermined position from the reference position is a multiple of the unit moved amount.

17. (Amended) A computer-readable recording medium storing a character action setting program in a video game in which a play character is displayed on a game screen on a monitor and moved from a reference position to a predetermined position within a game space by operating an operation member, the character action setting program comprising the steps of:

preparing a first image data group including a [plurality] predetermined number of frames of image data for displaying a first action relating to the moving action of the play character and a second image data group including a plurality of frames of image data for displaying a second action;

consecutively displaying a frame of image data at a constant time interval, said step of displaying a frame of image data comprising the steps of

sequentially displaying an image corresponding to each of the predetermined number of frames for the first action when the operation member is not operated, and

upon operation of the operation member,

generating new image data for a new frame to be created between successive frames by interpolation between the successive frames based on the detected operation of the operation member, and

displaying the newly generated image data; and

switching the first image data group to the second image data group such that the first action, and the second action are smoothly successively displayed without any

discontinuity when the play character reaches the predetermined position by repeatedly displaying the first action.

24. (Amended) A computer-readable recording medium according to claim 17, wherein the moving speed of the play character displayed on the monitor by the first action varies according to the operated amount of the operation member, further comprising the step of setting the unit moved amount of the play character by the first action [is set] at a constant value regardless of the moving speed of the play character, and the distance of the predetermined position from the reference position is a multiple of the unit moved amount.

MARKED ABSTRACT

A video game device is provided with a recording medium [122] storing a first image data group including a plurality of frames of image data for displaying a running action and a second image data group including a plurality of frames of image data for displaying a goal finishing action which successively follows the running [action; a] action. A character display control unit [201e for reading] reads the first and second image data group from the recording medium [122] and [displaying] displays motions of a play character based on the read image [data, and a] data. A switch control unit [201h for switching] switches the first image data group to the second image data group such that the running action and the goal finishing action are successively displayed without any discontinuity when the play character reaches a predetermined position by repeatedly displaying the running action. With such a video game device, an increase in production costs can be effectively suppressed, and a game player is prevented from having a feeling of incongruity while viewing displayed images.